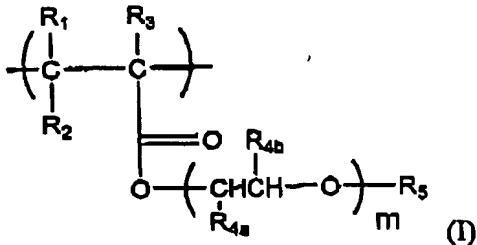


Application No.: 10/571998

Docket No.: NTW-031US

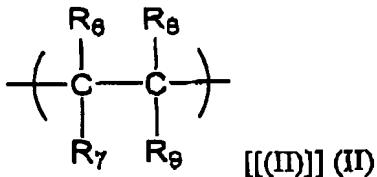
AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A composition for a polymer solid electrolyte comprising a copolymer having repeating units represented by Formula (I):



wherein each of R₁ to R₃ independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R₁ and R₃ may bond to one another to form a ring; each of R_{4a} and R_{4b} independently represents a hydrogen atom or a methyl group; R₅ represents a hydrogen atom, a hydrocarbon group, an acyl group or a silyl group; m is an integer of 1 to 100, and each of R_{4a} and each of R_{4b} may be the same or different when m is 2 or more;

and repeating units represented by Formula (II):



wherein each of R₆ and R₈ independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R₆ and R₈ may bond to one another to form a ring; and R₇ represents a hydrogen atom, a C1-C10 hydrocarbon group, a hydroxyl group, a hydrocarbonoxy group, a carboxyl group, an acid anhydride group, an amino group, an ester group, or an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group; and R₉ represents an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group;

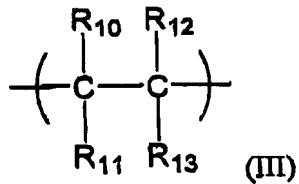
and an electrolyte salt.

2-8. (Canceled)

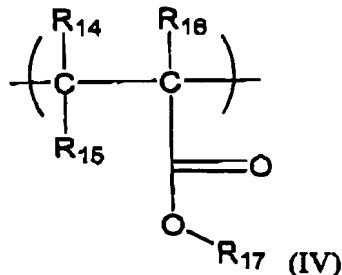
Application No.: 10/571998

Docket No.: NIW-031US

9. (Currently Amended) The composition for a polymer solid electrolyte according to Claim 1 further comprising a repeating unit derived from a polymerizable unsaturated monomer, which is different from the repeating units represented by the Formula (I) and the Formula (II).
10. (Currently Amended) The composition for a polymer solid electrolyte according to Claim 9, wherein the repeating unit derived from polymerizable unsaturated monomers comprises at least one repeating unit selected from the group consisting of units represented by Formula (III)



wherein each of R₁₀ to R₁₂ independently represents a hydrogen atom or a C1-C10 hydrocarbon group, and R₁₃ represents an aryl group or a heteroaryl group; and units represented by Formula (IV)



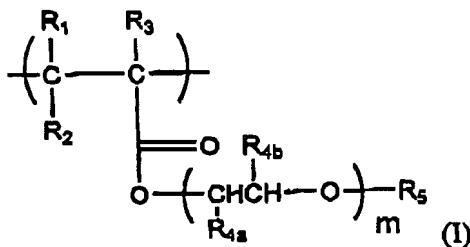
wherein each of R₁₄ to R₁₆ independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R₁₄ and R₁₆ may bond to one another to form a ring; and R₁₇ represents a C1-C12 alkyl group, an aryl group, an alicyclic hydrocarbon group, or a heterocyclic group.

11-24. (Canceled)

25. (Currently Amended) A polymer solid electrolyte comprising:
a copolymer having repeating units represented by Formula (I):

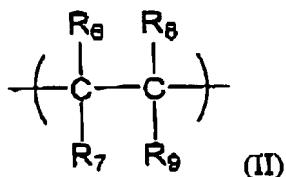
Application No.: 10/571998

Docket No.: NIW-031US



wherein each of R₁-R₃ independently represents a hydrogen atom or a C₁-C₁₀ hydrocarbon group; R₁ and R₃ may bond to one another to form a ring; each of R_{4a} and R_{4b} independently represents a hydrogen atom or a methyl group; R₅ represents a hydrogen atom, a hydrocarbon group, an acyl group or a silyl group; m is an integer of 1 to 100, and each of R_{4a} and R_{4b} may be the same or different when m is 2 or more;

and repeating units represented by Formula (II):



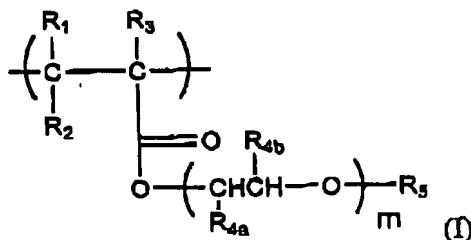
wherein each of R₆ and R₈ independently represents a hydrogen atom or a C₁-C₁₀ hydrocarbon group; R₆ and R₈ may bond to one another to form a ring; and R₇ represents a hydrogen atom, a C₁-C₁₀ hydrocarbon group, a hydroxyl group, a hydrocarboxy group, a carboxyl group, an acid anhydride group, an amino group, an ester group, or an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group; and R₉ represents an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group;

and an electrolyte salt.

26. (Currently Amended) A polymer solid electrolyte comprising:
 a cross-linked polymer obtained by a reaction of a cross-linking agent with a copolymer having repeating units represented by Formula (I):

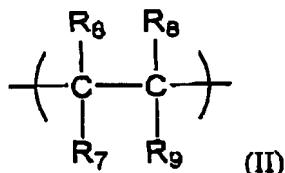
Application No.: 10/571998

Docket No.: NIW-031US



wherein each of R₁-R₃ independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R₁ and R₃ may bond to one another to form a ring; each of R_{4a} and R_{4b} independently represents a hydrogen atom or a methyl group; R₅ represents a hydrogen atom, a hydrocarbon group, an acyl group or a silyl group; m is an integer of 1 to 100, and each of R_{4a} and each of R_{4b} may be the same or different when m is 2 or more;

and repeating units represented by Formula (II):



wherein each of R₆ and R₈ independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R₆ and R₈ may bond to one another to form a ring; and R₇ represents a hydrogen atom, a C1-C10 hydrocarbon group, a hydroxyl group, a hydrocarboxy group, a carboxyl group, an acid anhydride group, an amino group, an ester group, or an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group; and R₉ represents an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group;

and an electrolyte salt.

27-32. (Canceled)

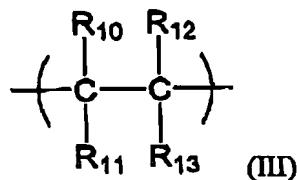
33. (Currently Amended) The polymer solid electrolyte according to Claim 25, wherein the copolymer having the repeating units represented by the Formula (I) and the Formula (II) further comprising includes a repeating unit derived from a polymerizable unsaturated

Application No.: 10/571998

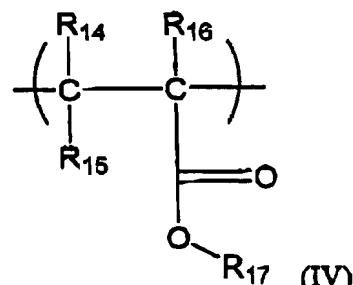
Docket No.: NTW-031US

monomer, which is different from the repeating units represented by the Formula (I) and the Formula (II).

34. (Currently Amended) The polymer solid electrolyte according to Claim 33, wherein the repeating unit derived from polymerizable unsaturated monomers is at least one repeating unit selected from ~~these~~the group consisting of units represented by Formula (III)



wherein each of R₁₀ to R₁₂ independently represents a hydrogen atom or a C₁-C₁₀ hydrocarbon group, and R₁₃ represents an aryl group or a heteroaryl group; and units represented by Formula (IV)



wherein each of R₁₄ to R₁₆ independently represents a hydrogen atom or a C₁-C₁₀ hydrocarbon group; R₁₄ and R₁₆ may bond to one another to form a ring; and R₁₇ represents a C₁-C₁₂ alkyl group, an aryl group, an alicyclic hydrocarbon group, or a heterocyclic group.

- 35-50. (Canceled)

51. (Currently Amended) A polymer[[,]] comprising: a polymer segment (P1) having an ion-conductivity, a polymer segment (P2) not having an ion-conductivity, and a polymer segment (P3) having a cross-linking point, the polymer being disposed in an order of P3, P2, P1, P2, and P3.

52. (Canceled)

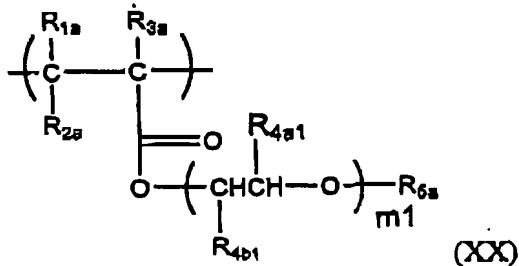
Application No.: 10/571998

Docket No.: NIW-031US

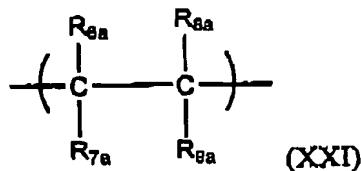
53. (Currently Amended) A polymer solid electrolyte[.] comprising a cross-linked polymer obtained by a reaction of a polymer with a cross-linking agent, and an electrolytic salt, wherein the polymer includes a polymer segment (P1) having an ion-conductivity, a polymer segment (P2) not having an ion-conductivity, and a polymer segment (P3) having a cross-linking point, the polymer being disposed in an order of P3, P2, P1, P2, and P3.

54-55. (Canceled)

56. (Currently Amended) [[The]]A polymer solid electrolyte battery according to ~~Claim 54~~, wherein the comprising an electrode which comprises an electrode-activating compound and a copolymer including a disposition of block chains arranged in an order of B11, A11 and C11, wherein the block chain A11 includes a repeating unit represented by Formula (XX)



wherein each of R1a and R3a independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R1a and R3a may bond to one another to form a ring; each of R4a1 and R4b1 independently represents a hydrogen atom or a methyl group; R6a represents a hydrogen atom, a hydrocarbon group, an acyl group or a silyl group; m1 represents an integer of 2 to 100; and R4a1 and R4b1 may be the same or different from each other, and the block chain B11 includes a repeating unit represented by Formula (XXI):



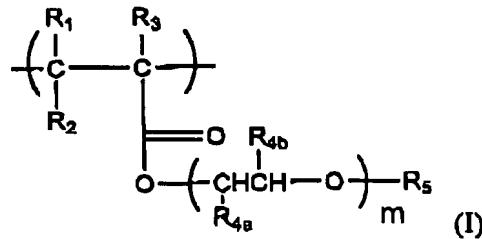
wherein each of R6a to R8a independently represents a hydrogen atom or a C1-C10 hydrocarbon group; and R9a represents an aryl group.

Application No.: 10/571998

Docket No.: NIW-031US

57-73. (Canceled)

74. (Currently Amended) An ion-conductive membrane[[.]] comprising: a membrane which includes a polymer segment (P1) having an ion-conductivity, a polymer segment (P2) not having an ion-conductivity, and a cross-linked polymer segment (P4), wherein a network type microphase-separated structure is included in the membrane.
75. (Currently Amended) An ion-conductive membrane[[.]] comprising: a membrane containing a cross-linked polymer which is obtained by a reaction of a polymer with a cross-linking agent, wherein the polymer includes a polymer segment (P1) having an ion-conductivity, a polymer segment (P2) not having an ion-conductivity, and a polymer segment (P3) having a cross-linking point, wherein a network type microphase-separated structure is included in the membrane.
76. (Currently Amended) An ion-conductive membrane according to Claim 75, wherein the polymer ~~including the polymer segment (P1) having an ion conductivity, the polymer segment (P2) not having an ion conductivity, and the polymer segment (P3) having a cross-linking point,~~ forms a microphase-separated structure.
77. (Currently Amended) A copolymer having an arrangement of block chains in an order of B1, C1, A, C2, and B2, wherein the block chain A has a repeating unit represented by Formula (I):

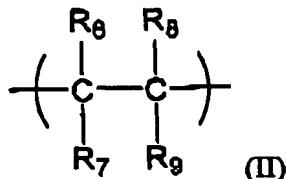


wherein each of R1-R3 independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R1 and R3 may bond to one another to form a ring; each of R4a and R4b independently represents a hydrogen atom or a methyl group; R5 represents a hydrogen atom, a hydrocarbon group, an acyl group or a silyl group; m is an integer of 1 to 100, and each of R4a and each of R4b may be the same or different when m is 2 or more;

the block chain B1 has a repeating unit represented by Formula (II):

Application No.: 10/571998

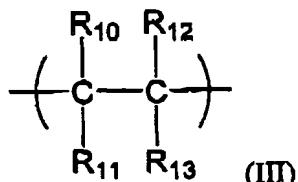
Docket No.: NIW-031US



wherein each of R_6 and R_8 independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R_6 and R_8 may bond to one another to form a ring; and R_7 represents a hydrogen atom, a C1-C10 hydrocarbon group, a hydroxyl group, a hydrocarbonoxy group, a carboxyl group, an acid anhydride group, an amino group, an ester group, or an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group; and R_9 represents an organic group having at least one functional group selected from the group consisting of hydroxyl group, carboxyl group, epoxy group, acid anhydride group and amino group;

the block chain B2 has having a repeating unit represented by the Formula (II) which may be the same or different from B1;

the block chain C1 has a repeating unit represented by Formula (III):



wherein each of R_{10} to R_{12} independently represents a hydrogen atom or a C1-C10 hydrocarbon group, and R_{13} represents an aryl group or a heteroaryl group[()]]; and

the block chain C2 has a repeating unit represented by the Formula (III) which may be the same or different from C1.

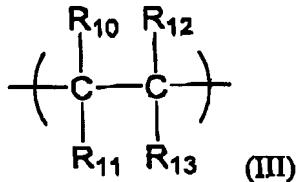
78-95. (Canceled)

96. (New) The polymer solid electrolyte according to Claim 26, wherein the copolymer further comprises a repeating unit derived from a polymerizable unsaturated monomer, which is different from the repeating units represented by the Formula (I) and the Formula (II).

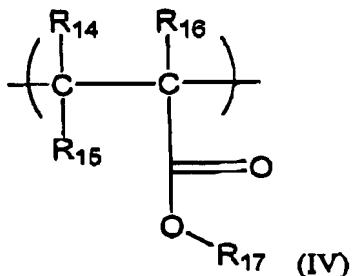
Application No.: 10/571998

Docket No.: NIW-031US

97. (New) The polymer solid electrolyte according to Claim 33, wherein the repeating unit derived from polymerizable unsaturated monomers is at least one repeating unit selected from the group consisting of units represented by Formula (III)



wherein each of R₁₀ to R₁₂ independently represents a hydrogen atom or a C1-C10 hydrocarbon group, and R₁₃ represents an aryl group or a heteroaryl group; and units represented by Formula (IV)



wherein each of R₁₄ to R₁₆ independently represents a hydrogen atom or a C1-C10 hydrocarbon group; R₁₄ and R₁₆ may bond to one another to form a ring; and R₁₇ represents a C1-C12 alkyl group, an aryl group, an alicyclic hydrocarbon group, or a heterocyclic group.